

### Welcome to WET -- The Water Estimation Tool

This tool helps facilities to optimize water use by:

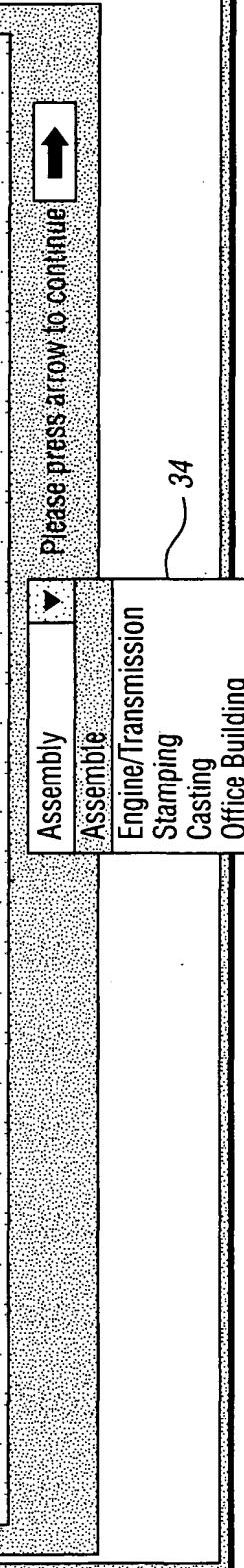
- 1) Estimating water consumption for equipment and systems whose usage is unknown, and
- 2) Providing typical use rates for comparison to identify the greatest opportunities for water use reduction, and
- 3) Aiding facilities in creating a water balance for total water use.

When creating a water balance it is preferable to first utilize metered data and data where process knowledge provides a high level of confidence (e.g. cooling towers). A water balance can be developed by building upon known water consumption with estimates from this program for systems where no data is available (e.g. lawn watering or kitchen operations).

The "Summary Sheet" may be created when all desired calculations are complete to build a facility water balance diagram and collect the value estimated on each worksheet. User may substitute known values for estimated ones and enter additional water use volumes for items not included in this program.

Please note, unusual episodic releases such as draining a fire reservoir or a cooling tower blowdown valve stuck open may significantly alter real water use volumes, and may not be reflected by these water use estimations.

To begin the program, select one of the following types below and press the arrow key



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<p>Please respond to the following questions. If exact figures are unavailable you may use educated guess to get started. Use only the pull down lists to specify units. When all fields have been answered, press "COMPLETE".</p> <p>What is the facility floor area?</p> <p>What is the plant production per year?</p> <p>How many production/work days per year?</p> <p>What is the total number of employees in the plant?</p> <p>How many cafeteria meals are served per day?</p> <p>What is the area of lawn watered?</p> <p>How many cooling towers does your facility have?</p> <p>Please choose the volumetric units you prefer to use. All your inputs (unless a pulldown menu is offered) and all answers are assumed to be in these units.</p>																									
<p>Unit Choice</p> <table border="1"> <tr> <td>3,200,000</td> <td>square feet</td> <td>▼</td> </tr> <tr> <td>230,000</td> <td></td> <td></td> </tr> <tr> <td>240</td> <td></td> <td></td> </tr> <tr> <td>2,500</td> <td></td> <td></td> </tr> <tr> <td>38</td> <td></td> <td></td> </tr> <tr> <td>1,700</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>acres</td> <td>▼</td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> </table>	3,200,000	square feet	▼	230,000			240			2,500			38			1,700			3	acres	▼	3			<p>40</p> <p>42</p> <p>44</p> <p>46</p> <p>48</p>
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<p>Domestic Water Use</p> <p>Lawn Watering Use</p> <p>Fire Protection System Water Use</p> <p>Assembly Operations</p> <p>Cooling Tower Water Use</p> <p>Boiler System Water Use</p> <p>FINAL SUMMARY SHEET</p>																									

Digi. 3

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Domestic		
	Daily Use	Annual Use
Employee Use	37,500	9,000,000
Cafeteria Use	2,720	652,800
Janitorial Use	15,543	3,730,286
<b>Total Annual:</b>	<b>13,383,086</b>	

50

*Dig. 4*

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Lawn Watering	
Please answer all of the following questions	
How many months are grounds irrigated per year?	6
How many times per week are the grounds?	3
How long is each watering event (in minutes)?	20
Calculate	

54

858,097

52

*Dig. 5*

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Fire Water System	Total Annual Use (\$3):	Daily Use
Measure the average time your jockey pumps run per day in minutes. A typical value is about 12 minutes per day.	15	
What is the pump rate? Please use the pull-down menu to select pump rate units? A typical for pump rate is 75 GPM/4.73 LPS/17.03 (m3/hr).	70	1,050 383,250
How many risers are in your plant? If unknown please leave blank.		420,000
How many flow switches do you have in your plant (one-inch drain test). If unknown please leave blank.		230,400
How many hydrants are on facility grounds?	18	46,800
<b>CALCULATE</b>		1,080,450

60

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Dig. 6

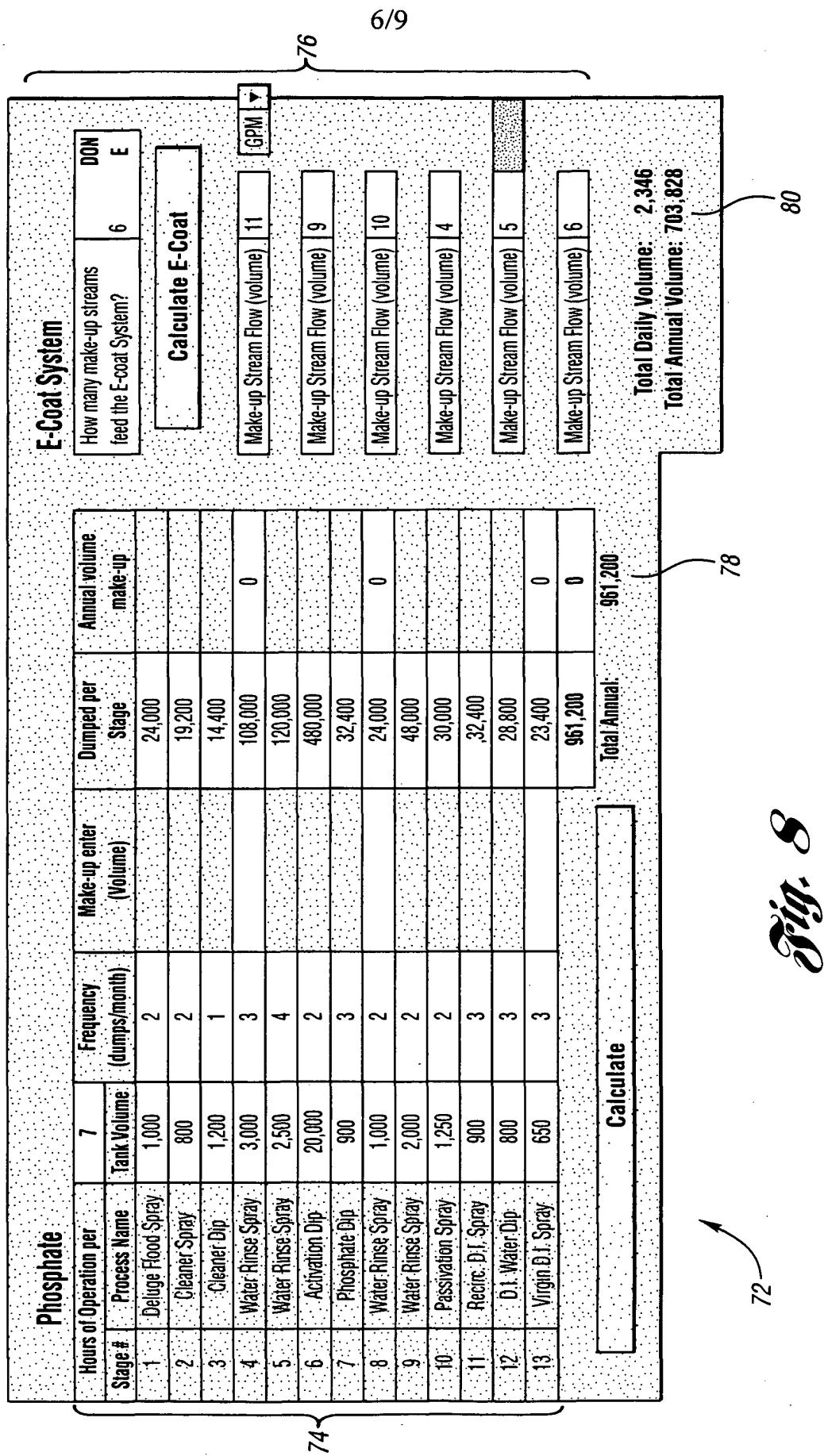
Car Wash and Leak Testing	
For systems with Once Through Water Use:	If True Mark 'Y'
Is the leak test a once-through operation?	
Is the Dynamic/funnel/hurricane test a once-through operation?	
Is the Car Wash a once-through operation?	
For Systems with Recalculating Water:	
How large is Your Leak Test Collection Sump (Vol.)?	5,000 240,000
How many dumps per month?	4
How Large is your Dynamic/funnel/hurricane test collection sump (Vol.)?	8,000 384,000
How many dumps per month?	4
How Large is your car wash collection sump (Vol.)?	3,500 168,000
How many dumps per month?	4
Total Amount:	792,000
Calculate Water Booth Water Use	

68

66

70

Dig. 7



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Cooling Towers			
		Total Amount Use 2,425,136	
<input type="button" value="Calculate"/>			
<b>1</b> What is the cooling tower name or location? (Optional)		Process A	(Gallons/Day) (Gallons/Year)
What is cooling tower recirculation rate?		500	2,938 1,071,636
What is the difference in temperature (°C) between the influent and effluent?		4	
What cycles of concentration does the cooling tower operate at (if known, 3 is a good approximation)?		6	
How many months per year does the tower operate?		12	
<b>2</b> What is the cooling tower name or location? (Optional)		Process B	(Gallons/Day) (Gallons/Year)
What is cooling tower recirculation rate?		275	2,104 767,448
What is the difference in temperature (°C) between the influent and effluent?		5	
What cycles of concentration does the cooling tower operate at (if known, 3 is a good approximation)?		5	
How many months per year does the tower operate?		12	
<b>3</b> What is the cooling tower name or location? (Optional)		Seasonal	(Gallons/Day) (Gallons/Year)
What is cooling tower recirculation rate?		0	3,213 586,051
What is the difference in temperature (°C) between the influent and effluent?		0	
What cycles of concentration does the cooling tower operate at (if known, 3 is a good approximation)?		0	
How many months per year does the tower operate?		0	

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Boiler System/Powerhouse	
What is the total output rating for ALL active boilers?	500 hp. hr. ▶
If condensate return is used for the boiler feed, what is the percent return?	85%
Is the incoming water treated with membrane filtration (RO or similar technology)?	N
If the incoming water treated with a demineralizer?	Y
Complete	
<b>Annual Volume of Boiler Water: 1,728,000</b>	

90

92

Fig. 10

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Please enter the cost of water in the cell provided. Enter NUMBERS only, not symbols

Cost of Water:	4.50	Cost / 1000: 96
Percent of Total Water from purchased source:	100.00%	110 108
Total Cost:	91,200	106

*Digi. II*

Total Annual Volume (Gallons)	20,266,769
Collect Results	104

Annual volume of domestic water use:	13,383,086
Annual volume of lawn care water use:	858,097
Annual volume of fire protection system water use:	1,080,450
Annual volume of cooling tower water use:	2,425,136
Annual volume of boiler system water use:	1,728,000
Annual volume of phosphate / E-coat water use:	0
Annual volume of leak tests and car wash water use:	792,000
Annual volume of additional water use:	98a

100

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102

98a

94